

CHAPTER 2

Issues and Alternatives

I. INTRODUCTION

This chapter describes and compares three alternatives; two action alternatives that meet the purpose and need described in Chapter I, and a No Action Alternative. Alternatives reflect a different response to the major issues identified through the scoping and analysis process, and each alternative produces different environmental effects. This chapter also discusses the scoping and public involvement process, environmental issues, the alternative development process, mitigation measures, and alternatives not studied in detail.

II. PUBLIC INVOLVEMENT AND SCOPING PROCESS

The first step in an environmental analysis is to determine what needs to be analyzed. To do this the NEPA outlines a process termed "scoping" (refer to 40CFR 1501.7). This is an open process designed to determine the potential issues associated with a proposed action and significant to the decision. First, comments are obtained from interested and affected parties, both within and outside the agency. These comments are used to develop potential issues that must be considered. Second, these "potential issues" are reviewed by the interdisciplinary team to determine: (a) the significant issues to be analyzed in depth, and (b) issues which are not significant or which have been covered by prior environmental review and therefore should be eliminated from detailed study. To begin this planning process a scoping letter was sent to interested parties on July 14, 2003 (Mailing List, Project File). This project was identified in the Gallatin National Forest NEPA Quarterly Project Listings in January 2003. It was also included in subsequent listings for the spring, summer and fall of 2003, Livingston Ranger District Proposed Projects. Forty letters were sent out and twelve responses were received commenting on this proposal. Comments received were used to help identify issues. These issues became the focus for the action alternatives presented in this EA. Documentation of the review of scoping comments and potential issues can be found in the Shields River Road project file.

Once the scoping process was complete, the Interdisciplinary Team (ID Team) developed alternatives to the proposed action to address the significant issues. For the Shields River Road project area, three alternatives, including the No Action alternative, were determined to warrant detailed consideration.

This Environmental Analysis does not contain a decision. The purpose of this document is to disclose the known effects and consequences of alternatives being considered in detail and to solicit public input. The District Ranger will

make a decision based on consideration of the project alternatives, their effects, and public input and feedback on this document.

III. IDENTIFICATION OF ISSUES

Through the scoping process, the public and other agencies raised several concerns in response to the Proposed Action. Identification of issues included review of written and verbal comments, input from Forest Service resource specialists, and comments from state and other federal agencies. Pertinent comments from these sources were used to develop the significant issues.

Comments identified during scoping were evaluated against the following criteria to determine whether or not the concern has significance in that it would be a major factor in the analysis process or:

- 1) Is the concern relevant to and within the scope of the decision being made and does it pertain directly to the proposed action?
- 2) Can the concern be resolved through mitigation (avoiding, minimizing, rectifying, reducing or eliminating, or compensating for the proposed impact) in all alternatives?
- 3) Can the issue be resolved through project design in all alternatives?

For this proposal, four issues were found to be "significant" to the decision, in addition to achievement of the purpose and need. Significant issues are used in environmental analysis to formulate alternatives, prescribe mitigation measures, or analyze environmental effects. These are discussed in the issues section of this chapter and also in Chapter 3. These issues are incorporated into the alternative's analysis.

IV. SIGNIFICANT ISSUES

Based on the assessment of effects and public comment, the agency has determined that the following factors are significant to this decision.

Issue 1. Proposed road improvements could increase sediment delivery, modify riparian and wetland vegetation characteristics, and/or modify stream channel and watershed hydrology and affect habitat for aquatic biota.

Indicator: Sediment yields as measured in tons/year and % over natural compared to sediment guidelines established for Gallatin National Forest streams for fisheries protection. Channel geometry analysis at the Shields bridge site, and delineation of wetland areas affected by road reconstruction activities.

Concern: Road reconstruction activities have the potential to increase sediment yield to Shields River tributaries, which could have adverse impacts to aquatic biota. Increased fine sediment in streams has been shown to reduce spawning habitat quality for fish. The road reconstruction would also affect wetlands along the road corridor.

Scale of Analysis: The geographic extent of analysis for sediment, wetland, and stream channel will be limited to the road corridor and stream and wetland affected since impacts are site specific. In addition, the analysis will consider expanding an existing Palustrine Shrub wetland within the Shields River drainage on National Forest lands by 0.58 acres.

Issue 2. Invasive Plant Species: Proposed road improvement activities will create areas of disturbed, bare soils. These areas could become revegetated by invasive plant species.

Indicator: Evaluate existing infestations, predict effects of project activity and monitor for post-project treatment needs.

Concern: Invasive plant species, including noxious weeds, have a competitive advantage over native species. Non-native species have few, if any, predators or effective competitors and they can quickly occupy areas of raw soil, especially those that are tributary to roads and trails. Once established, non-native species will remain dominant unless and until artificial means (spraying, physical removal, introduced predators) are employed with sufficient intensity and over a long enough period of time to eliminate the introduced population. These means are often labor intensive and expensive.

Scale of Analysis: The analysis area for evaluating effects of this project on invasive plant species includes the full extent of disturbed soils, including areas disturbed during the course of construction. We will also be looking at existing infestations that could provide a source of seed.

The temporal scale for effects analysis includes the growing season immediately preceding construction and the period of active construction. Monitoring and follow-up treatments, if needed, will continue following construction. The Forest Service will continue monitoring for three years, with direct treatment, following construction to assure that Park County does not inherit a weed problem arising from construction activities.

Issue 3. Increased road width and the application of road surfacing adequate to support four-season use may result in increased recreation use of lands accessed by the Shields River road.

Indicator: Level of use data gathered by backcountry rangers. Information is available from visitor encounters, campsite inventories, weed surveys, trail inventories, and use records for the Bennett Creek Cabin.

Traffic counter results on the Shields River Road since the early 1990's.

It is not possible to segregate an increase in vehicles per day that is attributable to an improved road surface from the continuing, general increase in recreation visits occurring on the Gallatin National Forest. For this reason we will assess environmental impacts on National Forest resources, including roads and trails, from a foreseeable increase in the period of use – the improved road will be safely driven earlier in the spring and later into the fall.

Concern: The concern is that widening and improving the road may contribute to increased numbers of recreationists visiting the Shields River basin. Increased recreation use will, in turn, lead to additional maintenance needs for the trail and road system tributary to the Shields River road.

Scale of Analysis: Analysis will focus on changes in recreation use attributable to the proposed improvements in the road surface. Visitor encounters, campsite inventories and trail inventories provide approximately three years of base data. Use records for the Bennett Creek Cabin span a period of about ten years.

Issue 4. Safety – Increased traffic volume and vehicle speeds may compromise public safety.

Indicator: A smoother riding surface encourages higher vehicle speeds. Providing base course (a stable base for final surfacing) and pavement during the project for road stabilization and surface improvement from a commercial source may require truck haul on Highway 89 from the Wilsall area. The existing native surface of the Shields River Road becomes unstable and slick when wet.

Concern: The concern is that added road width and improved road surfacing will result in increased traffic and higher vehicle speeds on the Shields River Road. There is an additional concern that hauling gravel from a private source off-Forest will compromise the safety of travelers on Highway 89. Finally, there is a concern for public safety stemming from use of the Shields River Road in its present condition.

Scale of Analysis: The analysis will consider the portion of the Shields River Road proposed for improvement. Reference will also be made to traffic conditions on the portion of the Shields River Road that is already paved and to construction traffic on Highway 89.

A number of concerns identified during scoping were determined not to be significant or were outside the scope of this proposal. Other concerns were identified that would not be affected by this project or impacts could be mitigated or resolved through project design. A complete listing of all comments received during scoping and an explanation of how each was addressed by the Interdisciplinary Team is contained in the Project File at the Livingston District Office. Mitigation and Resource Protection Measures for all alternatives appear in Chapter 2. Best Management Practices and Soil Protection Guidelines are disclosed in Appendix B.

V. OTHER ANALYSIS ISSUES

The National Environmental Policy Act (NEPA) provides for the identification and elimination from detailed study the issues which are not significant or which have been covered by prior environmental review. The brief discussion of these issues focuses on why they will not have a significant effect on the human environment or how they have been covered elsewhere, such as with mitigation measures (40 CFR 1501.7(3)). While these concerns are important, they were either unaffected or mildly affected by the proposed action, or the effects could be adequately mitigated.

A number of issues were analyzed but not found to be significant factors in the decision process for proposed improvements to the Shields River Road project area. These issues were eliminated from detailed analysis in this EA for the following reasons:

1. They were not relevant or specific to this proposal for road work in the Shields River Road analysis area;
2. They were beyond the scope of this project level analysis and decision to be made;
3. Experience or analysis from other similar projects on the Forest has consistently demonstrated that effects related to this issue are not significant; and/or
4. All action alternatives were modified to include mitigation, which is effective in alleviating any major impact.

Following is the list of issues analyzed but not found to be significant factors in the decision for this project. A discussion of these issues can be found in Appendix A.

- A. Sensitive plant species, wildlife and their habitat
- B. Heritage Resources
- C. Energy Efficiency
- D. Cost Effectiveness
- E. Compatibility with current land uses during and after construction.

VI. ALTERNATIVES CONSIDERED IN DETAILED STUDY

The proposed action was designed to meet the purpose and need for the project. The Interdisciplinary Team developed alternatives to the proposed action in response to the issues identified through internal and external scoping. Each action, to the extent possible, must still fully or partially meet the purpose and need for which the project is proposed.

Alternative A– Proposed Action with a Gravel Pit On National Forest

The Proposed Action is similar to the original proposal as described in the Scoping document. The original proposal was presented to the public on June 21, 2003 during the scoping process. At the time of the scoping document, the Forest Service had not resolved which of two possible gravel sites on National Forest land might be developed. One of the purposes of scoping is to give the public the information they need to comment knowledgeably on the proposed action. Based on the comments received, along with on-site reviews by members of the Interdisciplinary Team, the Forest Service proposes to develop a pit site adjacent to the Sunlight Road in Section 26, T5N R10E, MPM. This site was shown as site #2 on the map accompanying the Scoping document.

This alternative fulfills the purpose and need outlined in Chapter I of the EA.

Alternative A proposes to:

- Improve the Shields River Road to the standards accepted by Park County and the Forest Service.
- Develop a pit site on National Forest land adjacent to the Sunlight Road #6630 in Section 26, T5N R10E, MPM. A temporary turnout would be constructed on the Sunlight Road. Gravel haul over the Sunlight Road would be restricted to weekdays.
- Modify the Shields River streambed upstream of the existing bridge over the Shields River at milepost 2.6. Rock will be excavated from the channel and placed to redirect stream flows away from erodible banks.

- Re-position existing riprap at the base of the bridge abutments to widen the channel beneath the bridge while retaining loose fill material along the approaches on either side of the Shields River.
- Replace a major culvert on the South Fork of the Shields River.
- Construct a parking area near the junction of the Sunlight Road #6630 and the Shields River Road. Construct a permanent, handicapped-accessible toilet near the parking area.
- Re-locate the existing gate at mile 5.1 on the Shields River Road to milepost 5.4 on the Shields River Road. Relocate the existing gate at milepost 0.5 on the Sunlight Road to milepost 0.1 on the Sunlight Road. The relocated gates will be adjacent to the proposed parking area. Relocating the gates will not affect public access.
- Replace the bridge across Deep Creek.
- Expand a wetland on National Forest land in the Shields River drainage by approximately 0.58 acre.

A map of ALTERNATIVE A is included at the end of this chapter.

Alternative B – Proposed Action with a Gravel Pit Not On National Forest

Alternative B would modify Alternative A by opting to purchase gravel from a commercial source. Future road surfacing material for on-going maintenance of the road system on National Forest would be furnished through continuing purchases from a commercial source.

A map of ALTERNATIVE B is included at the end of this chapter.

Alternative C- No Action

This alternative would take no action, leaving the road in its current condition with continued administration by the Forest Service. The improvements agreed to by the Forest Service and Park County would not be made. A pit site would not be developed on National Forest land and the Forest Service would not purchase suitable road surfacing material from a commercial source. A temporary turnout would not be constructed on the Sunlight Road. None of the actions that would modify the Shields River channel would occur. Drainage structures and the Deep Creek Bridge would not be replaced. A parking area would not be constructed and the gates on the Shields River Road and the Sunlight Road would not be relocated. The current seasonal closure would remain in effect.

The Shields River Road would not be widened; therefore wetlands would not be impacted by fill. There would be no need to replace buried wetlands by increasing the area of a comparable wetland elsewhere on public land.

Alternative C does not satisfy the purpose and need outlined in Chapter 1 of the EA.

A map of ALTERNATIVE C is included at the end of this chapter.

VII. MITIGATION AND FEATURES COMMON TO ALL ACTION ALTERNATIVES

This section describes project design features and activities, mitigation measures, and monitoring activities that are common to all action alternatives.

A. Water Quality

To minimize erosion and ensure compliance with State water quality standards, all activities will be completed using Best Management Practices (BMP's). The State of Montana requires that BMP's be used on all activities to comply with State Water quality standards. Those sections are hereby incorporated by reference into this EA, as well as the entire BMP provision listed in Appendix B – *Best Management Practices*.

Effectiveness: No Gallatin Forest road construction-related BMP violations have been documented in implementation and monitoring reviews since 1990 (GNF 1997 Annual Monitoring Report). Improved construction methods, Streamside Management Zone (SMZ) rules of 1993, and more complete BMP direction incorporated in NEPA documents and construction contracts have worked to virtually eliminate BMP problems of the past.

B. Soils Protection

Soil Quality Guidelines

Regional Guidelines and standards for protection of long-term productivity are applied. These are dated 11/12/1999 and are titled: FSM 2500 Watershed and Air Management R-1 Supplement 2500-99-1, Chapter 2550 – Soil Management. These guidelines allow about 75 percent less disturbance than previous guidelines. This is due to an increase in understanding of the effects of soil disturbance on soil productivity. Gallatin National Forest Guidelines are tiered from these Regional Guidelines and are documented in Appendix B: Soil Protection

Guidelines For Gravel Pit Development In The Lower Shields River Drainage.

Effectiveness: Monitoring of revegetation practices on road construction projects and reclamation of mineral developments indicate that these protection measures (Appendix B) have minimized soil disturbance and will maintain soil productivity. (Keunnen, L, et.al., May 2000).

C. Vegetation Management

Noxious Weeds

Noxious weed prevention and control procedures are described in Forest Service Region 1 Supplement to Forest Service Manual 2080. This Supplement outlines responsibilities and methods to manage noxious weeds at Forest and District levels. It includes numerous management practices that would be followed during activities associated with the Shields River Road. The Manual includes an integrated approach to education, prevention, suppression, and monitoring. The following items would be included as project design features in each action alternative.

Requirements to be Included in the Road Contract

- A source of gravel, whether on National Forest or private land, will be examined by the Forest Service and certified for use as a condition of accepting material from the site.
- All off road equipment will remove all mud, dirt, and plant parts before moving into project area. Cleaning must occur off National Forest lands and equipment will be inspected by the Forest Service before entering the project area. (This does not apply to service vehicles that stay on the roadway, traveling frequently in and out of the project area.)
- If operating in areas infested with new invaders, all equipment will be cleaned of weed seeds in a designated area prior to leaving the project site, to prevent spread of weeds.
- Disturbed sites will be revegetated using native certified weed free seed. Revegetation may include planting, seeding, fertilization, and weed-free mulching as appropriate.

- Existing sources of weed seed that could be picked up by passing vehicles and transported to the construction areas will be treated before construction begins.
- Straw used for road stabilization and erosion control will be certified for use by the Forest Service.
- Minimize the removal of trees and other roadside vegetation during construction, particularly on southerly aspects. Shading by established vegetation helps prevent invasive plant species from becoming established.
- Existing weeds on areas likely to be disturbed by construction activities will be treated with herbicides before construction, where practical.

Forest Service Responsibilities

- Disturbed sites will be monitored by the Forest Service for up to three years after project completion. The Forest Service will treat weeds as necessary.
- Appropriated dollars will provide financing of post construction activities. Following a reasonable period to allow for treatment of new infestations following construction (up to three years), Park County will assume responsibility for regular weed monitoring and control.

Effectiveness: These mitigation measures have proven effective on the Forest and throughout the Region as a precautionary measure to reduce or minimize the spread of noxious weed species from one area to another (1992 Monitoring Report, pages 254 to 260, and 1997 Monitoring Report, pages 58 to 60).

D. Recreation

Recreational activities in the Shields River road area consist of sight seeing on the Shields Loop Road and driving to the Shields River Campground, a primitive camping area, and the Bennett Creek rental cabin. The public hikes, rides stock, mountain bikes, motorcycles or ATV's on roads and trails that are open to those activities. Hunting elk and goats is popular in the fall.

The public accesses the Sunlight Trail # 260, Shields Lowline Trail # 258, and Lodgepole Creek #266 from the Shields Loop and Sunlight Road #6630. Snowmobiling, skiing and snowshoeing are popular

activities in the winter. The Shields Loop Road is a groomed snowmobile route that is maintained by the Big Sky Snowmobile Club.

Public use has created a dispersed recreation site in the same location as the gravel pit proposed for development next to the Sunlight Road. The area will not be attractive to recreationists while the pit site is active. When work at the pit is complete and reclamation efforts are underway, there is a concern that recreation activities will be resumed, prolonging the period of disturbance at the site and adding to the difficulty, and cost, of reclamation.

Mitigation and Project Design Features

- If the decision is to develop a gravel pit on National Forest land, the pit design will include a gate or other barrier to public vehicle access. The purpose of the closure is to provide for public safety while operations at the pit are underway and to allow for vegetative recovery in an area that has a history of use as a dispersed recreation site.

Effectiveness: Forest protection officers and backcountry rangers routinely monitor gates and signs on the Gallatin National Forest. Although there are exceptions, gate closures are usually effective on the Livingston Ranger District. This District also hires seasonal work crews to maintain the rental cabin program and recreational facilities. The above mitigation measure has proven effective on the Forest and throughout the Region as a precautionary measure to reduce or minimize recreational impacts.

E. Heritage Resources

Previously Identified Heritage Resources

Heritage resources are not present within the existing right-of-way of the Shields River Road and the Deep Creek Bridge. The locations of the proposed parking area and the gravel pit in Section 35, T5N R10E, MPM were examined for cultural resources during the summer of 2003.

Results of the 2003 Fieldwork

No historic or prehistoric sites were recorded.

Effectiveness: When conducted by trained personnel, field surveys have proven a reliable means of determining the presence or absence of heritage resources.

F. Public Safety (Construction, Signs, Restrictions)

The project area offers opportunities for public motorized travel, biking, hiking and horseback riding. Visitors also go through the area to access the Bennett Creek Cabin, various trails, and the Shields Loop Campground.

Developing a pit site on National Forest land adjacent to the Sunlight Road #6630 can conflict with use of the road by recreationists. Gravel would be crushed at the pit site and hauled over the Sunlight Road. Hauling on the Sunlight Road creates a concern for public safety. Alternative A addresses this concern by restricting hauling to the weekdays and constructing a temporary turnout on the Sunlight Road #6630. During weekdays, public vehicular traffic on the Sunlight Road would be subject to occasional delays of up to twenty minutes while gravel is being hauled.

Effectiveness: The public has come to recognize signing and other means of alerting travelers of a potential hazard by virtue of their common use in road construction projects involving Interstate Highways and state, county and city roads. Additionally, traffic control devices are monitored and enforced by the road contract administrator assigned to the project.

Restricting gravel hauling on the Sunlight Road to weekdays while providing a temporary turnout affords the road contractor a period to operate. It also affords the public an opportunity for motorized access, subject to occasional delays of up to twenty minutes during the weekdays, without compromising public safety.

G. Effects of construction on uses occurring on private land

Construction practices, particularly the need to relocate fence lines and changes in road alignment can disrupt vehicle access and add to the cost and difficulty of controlling livestock. Access to private rangelands may be interrupted. When construction is complete, there is a risk that the upgraded road will modify or possibly interfere with historic means of access to private rangelands. The following mitigation measures will direct both the final design of the road and the construction practices needed to implement the design. The intent of the mitigation measures is to allow construction to go forward without interfering with ranch management and to assure that the final design of the road is compatible with traditional uses of adjacent private lands.

The following mitigation measures will be incorporated into the construction contract:

1. Affected private landowners will be notified in advance of any changes in the status or location of existing fence lines. Proposals to temporarily relocate a fence line will be coordinated with the affected landowner.
2. The road contractor will promptly repair fences needed at the time that have been damaged by construction. Repair will be completed by the end of the current workday. The road contractor will maintain livestock affected by the fence(s) in their current pasture during construction activities
3. The road contractor will check needed fence lines in the vicinity of the day's activities before resuming construction. If livestock are found in the road corridor, they will be directed to the appropriate secure pasture before resuming construction. The affected landowners will be notified.
4. Historic approaches needed to access private land will be maintained in a serviceable condition, to the extent practicable. In the event an approach must be temporarily relocated, the adjacent fence line will be modified to assure needed access to range lands. Temporary and permanent changes in the location and serviceability of existing approaches made necessary by construction will be coordinated with the affected landowner.
5. Use of the Shields River Road and the lower 0.2-mile of the Sunlight Road will be subject to occasional interruption. Delays would not exceed twenty minutes. Longer delays would be expected while the contractor is working on bridge stringers or major culverts on the Shields River Road. Advanced notice of major delays will be provided to landowners. Flagmen could be used as needed to alert drivers of the need for extra care when traveling through the construction zone.

The following mitigation measures will be incorporated into the design of the improved road:

1. Provide for signing to encourage the public to stay on the designated road where the road crosses private land.
2. Changes in road alignment and location of road cuts and fills will be designed within the road easements across private land.
3. The design will identify a final, post-construction location of all fence lines impacted by the proposed road upgrade. Changes in the number

and location of gates and access will be coordinated with the affected landowner.

4. As a minimum, replacement fence lines and gates will be constructed to a standard at least equal to the condition of the fence at the time of construction.

5. New fences will be constructed, where appropriate, to meet objectives for resource management on public and private lands.

Effectiveness: With these mitigation measures in place the direct effects of road construction on access to adjacent private rangelands should be limited to occasional, 20-minute delays. The time lost to delay will be compounded by the need to travel more slowly over a roughened surface during construction.

The mitigation measures to be integrated into the design of the improved road are practices commonly used to control construction. They are expected to prevent adverse direct effects on access to private rangelands adjacent to the Shields River Road. In addition, these measures are expected to provide for traditional uses of these rangelands.

H. Effects of construction on wetlands

Approximately 0.086 acres of Palustrine Forested Wetland and 0.383 acres of Palustrine Shrub wetland or a total of 0.469 acres would be impacted by road fill, all within the existing Shields road right-of-way. The Palustrine Shrub wetlands are Corps of Engineers jurisdictional wetlands and will require wetland mitigation of 0.58 acres or wetland replacement on National Forest lands in the Shields River watershed. The Corps has suggested expanding an existing Palustrine Shrub wetland within the Shields River drainage on National Forest lands laterally by 0.58 acres by removing surface confinements to groundwater table extension. The wetland mitigation must be completed within 1 year of road project completion and must be effective within 3 years. The resulting wetland area may need some transplanting of sedges and shrubs to establish wetland vegetation. Some shaping and leveling would be necessary if the 0.58 acres of replacement wetland is to become saturated from an adjacent, existing wetland. The wetland mitigation area would be internally drained and would not pose off site water quality impacts.

Effectiveness: The proposed mitigation is routine for Montana Department of Highways wetland mitigation projects. Mitigation of adverse environmental impact to wetlands is an accepted and common use of funds available through the Federal Highways Administration.

VIII. PROJECT MONITORING

Project Implementation

General implementation of the project (road design, contract preparation, contract administration, and implementation of mitigation measures) will be completed by qualified Forest Service personnel, and reviewed by the District Ranger and staff before construction begins. Construction contract administration will be conducted on a regular basis and as needed to obtain acceptable contractor performance. All contact activities and correspondence will be documented and filed in the construction contract records.

Public Safety

The construction contract administrator will ensure that the contract provisions requiring warning signs, etc. will be followed.

Noxious Weed Occurrence

Soils disturbed by construction will be monitored for any new populations of weeds. Since some seeds remain viable for many years in the soil, the number of years for monitoring the site will be adjusted according to the species to be treated (Sheley and Petroff 1999). Monitoring and treatment by Forest Service personnel will continue up to three years following acceptance of the road by Park County. This will reduce the likelihood of the County inheriting a need to treat new noxious weed infestations that became established while a federal agency was responsible for administering the road construction contract.

Wetlands

Wetland mitigation is being conducted in accordance with the US Army Corps of Engineers requirements. Design of wetland mitigation is being done in accordance with the Corps Of Engineers advice memo of 02/06/04. This memo provides the guidance for wetland functional assessment and wetland mitigation specific to the Shields River Road proposal. Since the Forest Service is a Federal agency, Wetland Executive Order (EO) 11990 requires replacement in kind with no net loss of wetlands. Coordination is ongoing with the Army Corps of Engineers, Helena Office, for wetland mitigation permitting and mitigation.

The Corps has directed the Gallatin NF to submit a Section 404 wetland permit application when the location of proposed mitigation is finalized. This will occur during the summer of 2004. The Corps will review the proposed mitigation application, and specify needed changes if any to the proposed mitigation plan before approving the mitigation project. The wetland mitigation must be completed within 1 year of road project completion and must be effective within 3

years. Monitoring will occur on a seasonal basis for up to three years to verify progress towards establishing an effective wetland within three years of completing construction.

Wildlife

Monitoring would take place during breeding season to determine presence of the boreal toad and the northern leopard frog prior to construction activities. Any mitigation needs would be determined based on survey findings and may include translocation attempts.

IX. ALTERNATIVES ELIMINATED FROM DETAILED STUDY

Four other alternatives were considered. However, during the preliminary analysis, the interdisciplinary team concluded that these alternatives did not warrant detailed analysis. Below is a description of these alternatives and the reasoning for dismissal from detailed study.

Alternative D – Forest Service/Park County Agreement Only

The National Environmental Policy Act calls for developing a range of alternatives, some of which may better satisfy the Purpose and Need than others. In an effort to identify the minimal actions needed to satisfy the Purpose and Need, the ID Team designed Alternative D to limit construction to those activities needed to bring the Shields River Road to a standard that both parties have agreed would allow Park County to assume jurisdiction over the road. The following activities would occur:

- Improve the Shields River Road to the standards accepted by Park County and the Forest Service. This would include replacing the bridges on the Shields River.
- Develop a pit site on National Forest land adjacent to the Sunlight Road #6630 in Section 35, T5N R10E, MPM. A temporary turnout would be constructed on the Sunlight Road. Gravel haul over the Sunlight Road would be restricted to weekdays.
- Replace a major culvert on the South Fork of the Shields River.
- Expand an existing wetland on National Forest land

The Line Officer chose not to pursue this alternative in detail. Alternative D would implement the minimal measures needed to satisfy the Purpose and Need. It would not, however, permit those additional actions needed to protect National Forest resources from unnecessary and avoidable adverse environmental

impact. Specifically, the following beneficial actions would not occur with Alternative D:

- Modify the Shields River streambed upstream of the existing bridge over the Shields River at milepost 2.6. Rock will be excavated from the channel and placed to redirect stream flows away from erodible banks.
- Re-position existing riprap at the base of the bridge abutments to widen the channel beneath the bridge while retaining loose fill material along the approaches on either side of the Shields River.
- Replace the bridge across Deep Creek. Place fresh surfacing on 0.1 mile of the Shields River Road leading to the bridge.
- Construct a parking area with a permanent sanitation facility; relocate the gates on the Shields River and Sunlight roads.

Alternative E – Shields River Floodplain

Alternative E would eliminate the flow constriction created by the current Shields River Bridge by replacing it with a single span over the full width of the floodplain. The ID Team chose not to pursue this alternative in detail after the Forest Hydrologist determined that the constricting effect of the bridge on stream flows had been overstated.

An examination of aerial photo 799-46 (8-1-99) indicates that the sinuosity and deposition nature of the Shields River for 2 miles above the bridge looks similar to the meanders (immediately) above the bridge. That would indicate the bridge effect on the river might not be as much as initially thought. (Mark Story, Forest Hydrologist, letter of 8/09/2003)

Alternative F – No Stream Channel Modification

Early in the NEPA process the fisheries biologist expressed concern that channel alterations proposed above the Shields River Bridge could adversely affect fisheries habitat. The ID Team designed Alternative F to respond to this concern. Alternative F would be similar to the original proposed action but Alternative F eliminates activities that would have a direct effect on the configuration of the Shields River channel. Alternative F satisfies the purpose and need outlined in Chapter 1 of the EA.

Alternative F proposes to:

- Improve the Shields River Road to the standards accepted by Park County and the Forest Service.

- Develop a pit site on National Forest land adjacent to the Sunlight Road #6630 in Section 35, T5N R10E, MPM. A temporary turnout would be constructed on the Sunlight Road. Gravel haul over the Sunlight Road would be restricted to weekdays.
- Replace a major culvert on the South Fork of the Shields River.
- Construct a parking area near the junction of the Sunlight Road #6630 and the Shields River Road.
- Re-locate the existing gate at mile 5.1 on the Shields River Road to milepost 5.4 on the Shields River Road. Relocate the existing gate at milepost 0.5 on the Sunlight Road to milepost 0.1 on the Sunlight Road. The relocated gates will be adjacent to the proposed parking area. There will be no change in access from the present.
- Replace the bridge across Deep Creek. Place fresh surfacing on 0.1 mile of the Shields River Road leading to the bridge.
- Expand an existing wetland on National Forest land

The Line Officer chose not to pursue this alternative in detail after the Forest Hydrologist and District fisheries biologist determined that implementing the in-stream modifications called for with Alternative 1 would be expected to beneficially affect fisheries habitat.

Alternative G – Develop A Gravel Source On Private Land

This alternative would be similar to the original proposed action but opts to develop a gravel source on private land. The site was in Section 19, T5N, R10E, MPM on the north side of the Shields River Road. The site was shown as site #1 on the map that accompanied the Scoping document. Public comment indicated that the landowner does not support stockpiling gravel for future use. Other commenters expressed concern for the appearance of a long-term gravel site next to the road. The Forest Service no longer considers site #1 a viable opportunity to develop material suitable for road surfacing.

X. COMPARISON OF ALTERNATIVES

TABLE 2-1: Comparison of Alternatives

The following table displays qualitative comparisons of the ability of an alternative to meet the Purpose and Need.

Significant Issue	Alt. A (On-Forest Pit)	Alt. B (Off-Forest Pit)	Alt. C (No Action)
Risk of increasing sediment yield and adversely modifying aquatic biota	Low <ul style="list-style-type: none"> Short term, small sediment increase followed by long-term reductions from current condition (Alt C). An on-Forest gravel pit is not expected to generate transferable sediment. Improved Yellowstone Cutthroat Trout (YCT) habitat in the long term when compared to Alt C. Wetland mitigation required 	Same as A <ul style="list-style-type: none"> An off-Forest gravel pit is not expected to generate transferable sediment in the project area. 	Greater Than A & B <ul style="list-style-type: none"> Current sediment yields that are contributing to reduced water quality would be maintained over the long term, and would be greater than Alternative A and B over the long term. Greater potential for adverse impacts to YCT habitat from current sediment yields when compared to Alts A & B. No impacts to wetlands.
Risk of increased new invasive weed infestations and expansion of existing sites due to proposed action	Moderate (Northern Region Risk Assessment Rating) <ul style="list-style-type: none"> Small increased risk from project-related ground disturbance and increased traffic, when compared to Alt C. 	Slight decrease from A <ul style="list-style-type: none"> 16% less ground disturbance in project area with off-Forest pit, thus smaller risk of invasive species, when compared to Alt A. 	Less than A & B <ul style="list-style-type: none"> No risk of new weed infestations from project related ground disturbances or increased traffic. Invasive weeds would continue to occur and spread, but would not be exacerbated by project.
Risk that road improvement would increase the period of road use, creating an increased need for facilities maintenance , including roads and trails.	Low <ul style="list-style-type: none"> A small increase in recreation use beyond what is expected to occur without the road improvements (Alt C). Since the road would support traffic earlier in the spring and later into the fall, there could be a slight increase from Alt. C in the numbers of recreationists using National Forest resources during 	Same as A <ul style="list-style-type: none"> An off-Forest gravel pit will not impact recreation use. 	Similar to A & B <ul style="list-style-type: none"> Recreation use is expected to continue to increase even without the road improvements.

Significant Issue	Alt. A (On-Forest Pit)	Alt. B (Off-Forest Pit)	Alt. C (No Action)
	these times. An extended period of use is not expected to result in more frequent or more extensive maintenance of roads, trails and other facilities than would occur with Alt. C.		
Risk that public safety will be compromised by road improvement activities and post-project changes in traffic patterns	<u>Low</u> <ul style="list-style-type: none"> o May be some short-term increase in risk during project work (including gravel pit hauling), but safety should increase post-project. o Gravel pit on-Forest decreases interface between gravel hauling and general public. 	<u>Slight increase from A</u> <ul style="list-style-type: none"> o The off-Forest gravel pit will potentially increase the interface between the general public and road improvement traffic, thus slightly increasing the risk when compared to Alt B. 	<u>Less than A & B</u> <ul style="list-style-type: none"> o There is no risk generated with not action. o Post-project safety will improve from current condition with improved site distances, road widths and stabilized road surfaces.